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BARR

March 11, 2013

Mr. Jason Gunter
Remedial Project Manager
U.S. Environmental Protection Agency
Region 7 - Superfund Branch
11201 Renner Blvd.
Lenexa, KS 66219

Re: The Doe Run Company – Federal Mine Tailings Site Monthly Progress Report

Dear Mr. Gunter:

As required by Article XVII, Paragraph 73 of the Administrative Order on Consent (Docket No.VII-97-F-0009) for the referenced project and on behalf of The Doe Run Company, the progress report for the period February 1, 2013 through February 28, 2013 is enclosed. If you have any questions or comments, please call me at 573-638-5020 or Mark Nations at 573-518-0800.

Sincerely,

Ty L. Morris, P.E., R.G.
Vice President

TLM/jms
Enclosure
c: Mark Nations – TDRC
Matt Wohl – TDRC (electronic only)
Mark Yingling – TDRC (electronic only)
Martin Kator – MDNR - DSP
Kathy Rangen – MDNR - HWP
Adam Nanney – Barr Engineering

07WG 40416547 4.2
Superfund
0U00

Federal Mine Tailings Site

Park Hills, Missouri

Monthly Progress Report

Period: February 1, 2013 – February 28, 2013

1. **Actions Performed or Completed This Period:**

   a. Work continued on the task of stockpiling rock onsite. This work focused on stockpiling trail rock, Type 1 riprap, Type 2 riprap, and Type 3 riprap. These rock types are being stockpiled in the northern portion of the Borrow Area. As of the end of the period, work on this task continued.

   b. Work in the Off Road Vehicle (ORV) Riding Area also continued on the Main Drainage Channel between 50+00 and 30+00 This work focused on final grading and applying rock to these areas As of the end of the period, work on this task has been completed.

      Work in the ORV Riding Area also continued on the Main Drainage Channel between 30+00 and 00+00. This work focused on rough grading the channel in the saturated areas to drain the surrounding areas so that it is possible to work in these areas. As of the end of the period, work on this task continued. It should be noted that work in this area has been slow due to the saturated nature of the tailings deposited in this area and the weather.

   c. Work in the ORV Riding Area also continued on covering the trails and grids that exceeded the 600 ppm action level in the portion of the ORV Riding Area included in Phase III and Phase IV of the fencing plan. As of the end of the period, work on this task continued.

   d. Work on the task of adding additional air monitoring stations into the network of stations continued. This work focused on developing an air monitoring plan, as well as the installation of another air monitoring station to the northeast of the Former Mill Area. As of the end of the period, work on this task has been completed and the monitor is up and running. The air monitoring plan is included with this progress report. This document should be inserted into Appendix B of the Removal Action Work Plan.

2. **Data and Results Received This Period:**

   a. Included with this progress report are two tables and two charts showing the data for the Missouri Department of Natural Resources – Department of State Parks (MDNR-DSP) air monitor located near the ORV Riding Area from January 2010 through December 2012. This includes a chart showing the daily average lead concentrations, a table showing the monthly average lead concentrations, and a table and a chart showing the 3-month rolling average lead concentrations. Neither The Doe Run Company nor Barr Engineering were involved with siting this monitor, collecting the samples, processing the samples, evaluating the data, or verifying the accuracy of the data.

   b. Included with this progress report is the NPDES Monitoring Report – Monthly Sampling for Outfall 002. Neither The Doe Run Company nor Barr Engineering were involved with collecting the samples, processing the samples, evaluating the data, or verifying the accuracy of the data.

3. **Planned Activities for Next Period:**

   a. Work in the ORV Riding Area will continue on the task of covering the trails and grids that exceeded the 600 ppm action level in the portion of the area included in the Phase III and IV fencing plan.

   b. Work in the ORV Riding Area will continue on the Main Drainage Channel. Work in this area will focus on constructing and rocking this channel.

   c. Work will continue on the task of stockpiling trail rock, Type 1 riprap, and Type 2 riprap.

d. The next MDNR-DSP progress meeting is planned for March 12, 2013.

4. Changes in Personnel:

a. None.

5. Issues or Problems Encountered and the Resolution:

a. None.

End of Monthly Progress Report

MISSOURI DEPARTMENT OF NATURAL RESOURCES
NPDES MONITORING REPORT FORM
Monthly Sampling – Monthly Reporting

MDNR, ST. JOE STATE PARK **MO-0097993** **ST. FRANCOIS COUNTY**	Owner Address: Missouri Dept. of Natural Res. PO Box 176 Jefferson City, Missouri 65102	Address Change for Owner: ☐ Billing ☐	Facility Address: MDNR/St. Joe State Park 2800 Pimville Road Park Hills, Missouri 63601

THIS REPORT COVERS THE PERIOD: **Please place an "X" in the box beneath the appropriate month reporting.**

January	February	March	April	May	June	July	August	September	October	November	December
			2012	2012	2012						
NO DISCHARGE ☐	NO DISCHARGE ☐	NO DISCHARGE ☐	NO DISCHARGE ☐	NO DISCHARGE ☐	NO DISCHARGE ☐	NO DISCHARGE ☐	NO DISCHARGE ☐	NO DISCHARGE ☐	NO DISCHARGE X	NO DISCHARGE ☐	NO DISCHARGE X
Due Feb. 28th	Due March 28th	Due April 28th	Due May 28th	Due June 28th	Due July 28th	Due August 28th	Due Sep. 28th	Due Oct. 28th	Due Nov. 28th	Due Dec. 28th	Due Jan. 28th

Samples Collected By: S. McCain	Phone: 573.431.1069	Analyses Performed by (LAB): Environmental Analysis South, Inc., 4000 East Jackson Blvd, Jackson, MO 63755	Phone: 573.204.8817

Outfall #: **002**

PARAMETER	UNIT	PERMITTED FINAL LIMITS DAILY MAX	PERMITTED FINAL LIMITS WEEKLY MAX	PERMITTED FINAL LIMITS MONTHLY AVG	SAMPLE 1 DATE COLLECTED 11/13/2012 / TIME COLLECTED 1435 Hours	SAMPLE 1 ANALYSIS DATE Please See Attachment	SAMPLE 2 DATE COLLECTED / TIME COLLECTED	SAMPLE 2 ANALYSIS DATE	AVERAGE OF SAMPLES IF TAKEN IN SAME MONTH	SAMPLE TYPE	ANALYTICAL METHOD
Cadmium, TR	ug/L	17		17						Grab	
FLOW	MGD	*		*	Please					24 hr estimate	
Lead, TR	ug/L	29		29	See					Grab	
PH	SU	***		***	Attachment					Grab	
Settleable Solids	mL/L	1.0		1.0						Grab	
Total Suspended Solids	mg/L	10		10						Grab	

SIGNATURE AND TITLE OF INDIVIDUAL PREPARING REPORT Sandra L McCain	DATE	PHONE NUMBER 573.431.1069	EMAIL ADDRESS: st.joe.state.park@dnr.mo.gov
SIGNATURE OF OWNER OR DESIGNEE APPROVING REPORT Sandra L McCain	DATE	PHONE NUMBER 573.431.1069	EMAIL ADDRESS: st.joe.state.park@dnr.mo.gov

(IF VIOLATION OCCURRED, PLEASE ATTACH EXPLAINATION OF POSSIBLE CAUSE)

Return form to: Missouri Department of Natural Resources
Southeast Regional Office
2155 North Westwood Blvd.
Poplar Bluff MO 63901

*** - Monitor and Report**

***** - pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.5-9.0 pH units.**

Environmental Analysis South, Inc

4000 East Jackson Blvd. - Jackson MO 63755 - 573-204-8817 - Fax 573-204-8818

Bill Bonnell
St. Joe State Park
2800 Pimville Road
Park Hills, MO 63601

Report Number: 119666

Report of Analysis

Reference: The analysis of wastewater is conducted in accordance US EPA approved methods listed in 40 CFR Part 136. All results expressed on an as received basis unless indicated by a footnote.

Log Number:	Sample Description:	Sample Date:	Sample Received Date:
1508601	Outfall #002	11/13/2012	11/14/2012

Minerals

Test Description		Result	Units	Method	Comment Code	Analysis Date	Analyst
pH Measurement		7.63	S.U.	SM-4500-H B-00	T1/T2	11/14/12	133

Preparation Methods

Test Description		Result	Units	Method	Comment Code	Analysis Date	Analyst
Metals ICP Sample Digestion		1	Prep	EPA-200.7 Rev. 4.4	PDC	11/27/12	
Total (Total Recoverable) Metals		1	Prep	EPA-200.2		11/19/12	133

Solids

Test Description		Result	Units	Method	Comment Code	Analysis Date	Analyst
Settleable Solids	<	0.5	ml/L/hr	SM-2540 F-97		11/14/12	133
Suspended Solids	<	2	mg/L	SM-2540 D-97	J	11/15/12	133

Total (Total Recoverable) Trace Metals

Test Description		Result	Units	Method	Comment Code	Analysis Date	Analyst
Cadmium	<	0.003	mg/L	SM-3111 B-99		12/04/12	133
Lead by ICP		0.13	mg/L	EPA-200.7 Rev. 4.4	PDC	11/27/12	
Zinc		0.458	mg/L	SM-3111 B-99		12/06/12	133

Environmental Analysis South, Inc

4000 East Jackson Blvd. - Jackson MO 63755 - 573-204-8817 - Fax 573-204-8818

Bill Bonnell
St. Joe State Park
2800 Pimville Road
Park Hills, MO 63601

Report Number: 119666

Report of Analysis

Respectfully submitted,

David F. Warren

Comments:

J	Estimated value, result is less than the reporting limit.
PDC	This parameter or group of analytes was analyzed by the subcontracting lab - PDC Lab Saint Louis, MO
T1/T2	Sample received out of recommended holding times./Parameter analyzed out of recommended holding times.

1196666

Environmental Analysis South
4000 East Jackson Blvd. * Jackson, MO 63755
Telephone (573) 204-8817 * Fax (573) 204-8818

CHAIN OF CUSTODY RECORD

Client: ST. JOE STATE PARK

Sampler's Signature: Sandra L McCain

Address: 2800 Pinville Rd

Date: 11-13-2012 Time: 1435 Hrs ☐ See Table

City/State/Zip: Park Hills Mo 63601

Additional Comments: Flow: 1,440 GPD

PO Number: _____ ☐ Rush Requested (Due Date: _____)

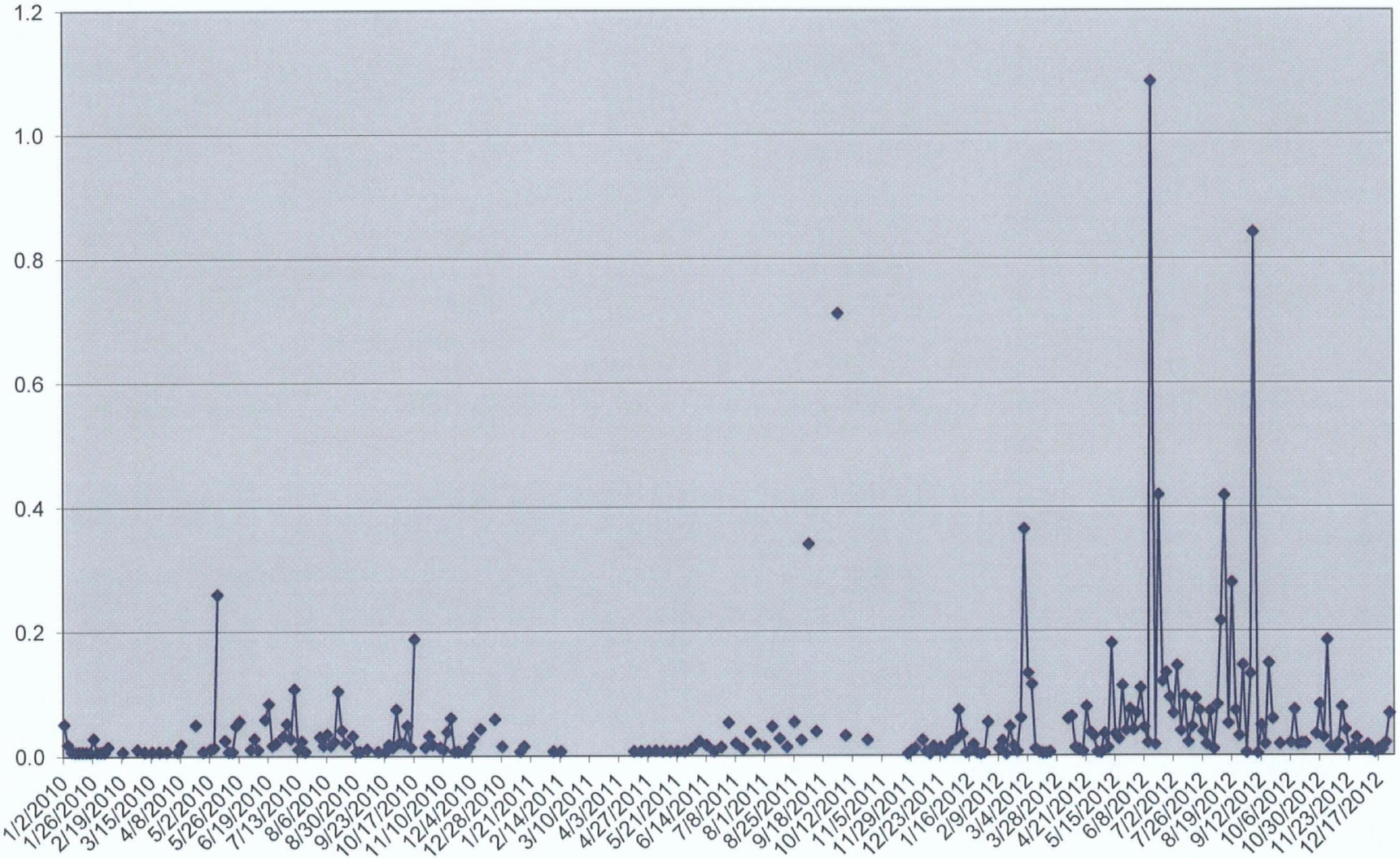
EAS Log Number	Sample Description	Containers			# of Bottles	Sample Matrix				Analysis																					
		Type*	Size	Preserv**		Water	Soil	Sludge	Other	TRCD PB ZN	SETT	TSS	pH				*ship														
1508601	OF#002	P	500	N	1					X																					
		P	1L	I	1						X																				
		P	1L	I	1							X	X																		
					(3)																										

*Container Code: P = Plastic V= VOA Vial C = Cube G = Glass A = Glass Amber
**Preservative Code: I = Iced F = Filtered N = Nitric Acid H = Hydrochloric Acid S = Sodium Hydroxide O = Sulfuric Acid T = Sodium Thiosulfate X = Other

Relinquished by	Date	Time	Received by:	Date	Time	Carrier
Sandra L McCain	11-13-2012	1530 Hrs				
Relinquished by:	Date	Time	Received by:	Date	Time	Carrier
				11/14/12	1110	UPS

Revised June 29 1999

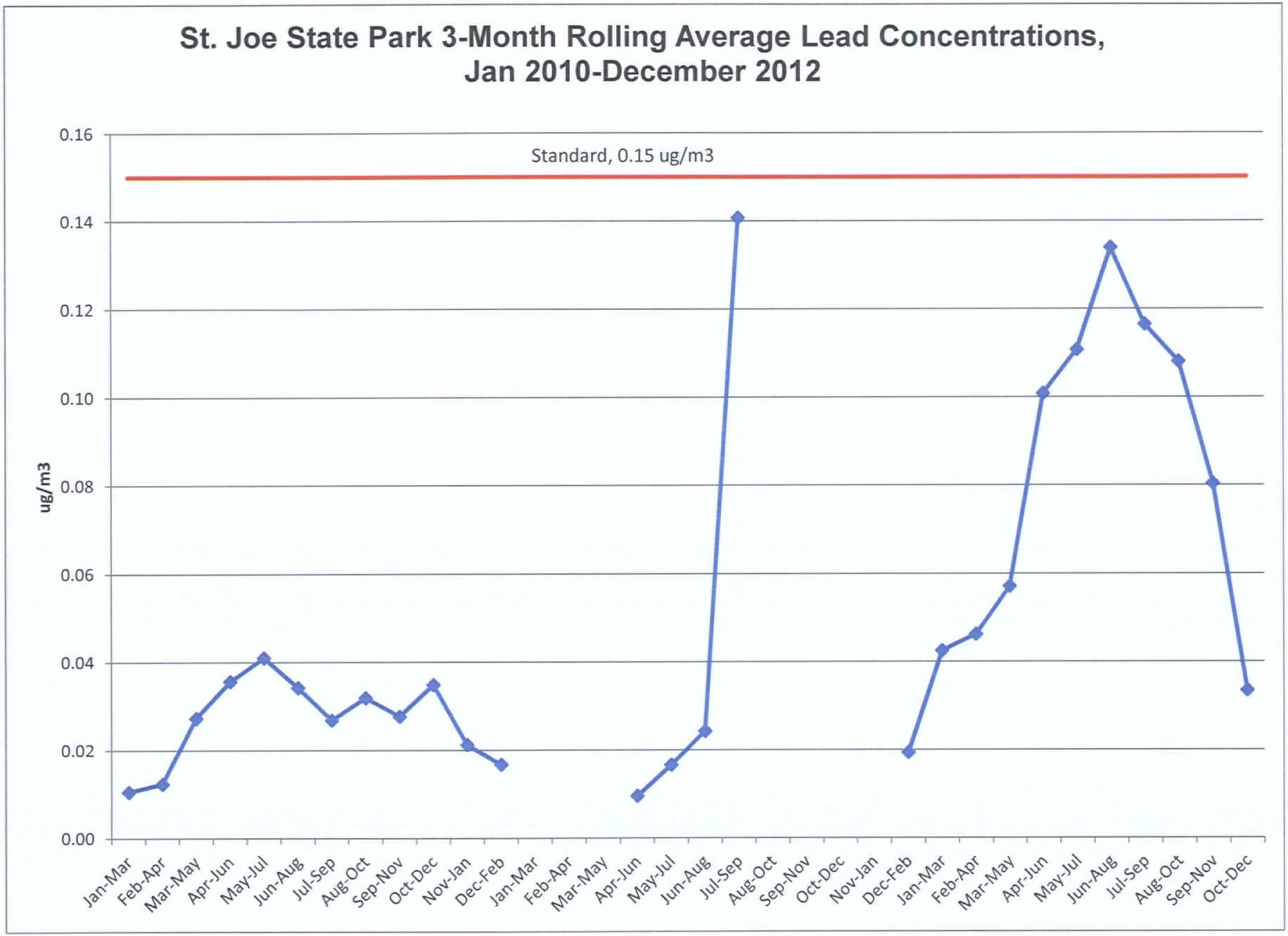
St. Joe State Park Daily Average Lead Concentrations, ug/m3



St. Joe State Park Lead, January 2010 through December 2012, ug/m3
Note values of 0 007 (or of 0 004 starting July 2011) are generally nondetects
Note blank cells indicate no valid sample, or insufficient data to calculate an average

Monthly Average Lead Concentrations, 2010-2012, ug/m3

January	0 015
February	0 009
March	0 008
April	0 021
May	0 054
June	0 033
July	0 037
August	0 033
September	0 011
October	0 052
November	0 021
December	0 032
January	0 011
February	0 007
March	
April	0 007
May	0 007
June	0 015
July	0 028
August	0 030
September	0 364
October	
November	
December	0 011
January	0 023
February	0 024
March	0 081
April	0 034
May	0 057
June	0 212
July	0 064
August	0 126
September	0 159
October	0 039
November	0 043
December	0 018


St. Joe State Park 3-Month Rolling Average Lead Concentrations, Jan 2010-December 2012
Standard, 0.15 ug/m3
ug/m3
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
Jan-Mar
Feb-Apr
Mar-May
Apr-Jun
May-Jul
Jun-Aug
Jul-Sep
Aug-Oct
Sep-Nov
Oct-Dec
Nov-Jan
Dec-Feb
Jan-Mar
Feb-Apr
Mar-May
Apr-Jun
May-Jul
Jun-Aug
Jul-Sep
Aug-Oct
Sep-Nov
Oct-Dec
Nov-Jan
Dec-Feb
Jan-Mar
Feb-Apr
Mar-May
Apr-Jun
May-Jul
Jun-Aug
Jul-Sep
Aug-Oct
Sep-Nov
Oct-Dec

3-Month Rolling Average Lead Concentrations, 2010-2012, ug/m3

Jan-Mar	0 011	0 15
Feb-Apr	0 012	0 15
Mar-May	0 027	0 15
Apr-Jun	0 036	0 15
May-Jul	0 041	0 15
Jun-Aug	0 034	0 15
Jul-Sep	0 027	0 15
Aug-Oct	0 032	0 15
Sep-Nov	0 028	0 15
Oct-Dec	0 035	0 15
Nov-Jan	0 021	0 15
Dec-Feb	0 017	0 15
Jan-Mar		0 15
Feb-Apr		0 15
Mar-May		0 15
Apr-Jun	0 010	0 15
May-Jul	0 017	0 15
Jun-Aug	0 024	0 15
Jul-Sep	0 141	0 15
Aug-Oct		0 15
Sep-Nov		0 15
Oct-Dec		0 15
Nov-Jan		0 15
Dec-Feb	0 019	0 15
Jan-Mar	0 043	0 15
Feb-Apr	0 046	0 15
Mar-May	0 057	0 15
Apr-Jun	0.101	0 15
May-Jul	0 111	0.15
Jun-Aug	0 134	0 15
Jul-Sep	0 117	0 15
Aug-Oct	0 108	0 15
Sep-Nov	0 081	0 15
Oct-Dec	0 034	0 15

Air Monitoring Quality Assurance Project Plan
Federal Mine Tailings Site
Park Hills, Missouri

March 2013

1.0 Introduction

The overall objective of the air monitoring effort will be to monitor airborne contaminants at the Federal Mine Tailings Site (Site) to determine if they exceed action level concentrations during removal actions. Air monitoring will provide data to determine if work practices must be altered, or if additional engineering controls are necessary to minimize offsite migration of unacceptable levels of airborne contamination. Necessary changes will be performed under the direction of the Environmental Protection Agency (EPA) designated project coordinator.

2.0 Discussion

Airborne contaminant concentrations will be determined by ambient air monitoring. This type of air sampling involves filtering air through various media over an extended period of time (such as 24 hours), followed by offsite laboratory analysis. Air monitoring can reliably obtain relatively low detection levels. In addition, air monitoring can provide information as to specific contaminants present. Air monitoring will be used to quantify long-term airborne emissions of lead and dust particulates.

3.0 Approach

Two major components are included in the air monitoring portion of the removal action. These include:

- **Meteorological Conditions Monitoring**

  The objective of monitoring meteorological conditions is to collect sufficient data to correlate the meteorological parameters with the air monitoring results. This will document that air was monitored at locations in accordance with this plan during the removal action. At a minimum, wind speed and direction, temperature, precipitation, and barometric pressure will be recorded. Wind speed and direction will be recorded to document that air was monitored at appropriate

locations during the removal action. Temperature and barometric pressure will be recorded to use in converting air volumes to standard temperature and pressure values.

- **Ambient Air Monitoring**

  Air monitoring data are utilized for the establishment of a permanent record and to determine if the removal action was conducted in compliance with air monitoring standards established by EPA. Ambient air is that air beyond the property lines where the general public has access The objective of air monitoring during the remediation project is to obtain high quality speciated sample analyses of the ambient air in the immediate vicinity.

Two different types of removal action work activities, as pertaining to air monitoring, have been identified for this project. These tasks include:

- **Intrusive Site Activities** – Those that will disturb or excavate surface and subsurface soils, and/or other potentially contaminated materials within the site boundary. This will include grading, excavation, hauling, etc.

- **Non-Intrusive Activities** – Those that will not disturb surface and subsurface soils, and/or other potentially contaminated materials within the site boundary. This includes surveying, sampling, decontamination, and other miscellaneous tasks.

4.0 Action Levels and Associated Response Actions

The National Ambient Air Quality Standards (NAAQS) for particulate matter that has a diameter smaller than 10 microns (PM_{10}) is 150 $\mu g/m^3$ over a 24-hour time weighted average (TWA). The action level will be 75 $\mu g/m^3$ over a 24-hour TWA, or one-half of the standard. Samples for particulate matter will be collected using volumetric flow controlled, high-volume PM_{10} samplers (PM_{10} samplers).

The NAAQS for airborne lead is 0.15 $\mu g/m^3$, or less, per three-month rolling average. The action level for airborne lead will be 0.15 $\mu g/m^3$ over a 24-hour TWA. Although the action level lead concentration is the same as the standard, the safety factor between the action level and the standard is provided by applying it on a daily basis rather than a three-month basis. Samples for lead will be collected using volumetric flow controlled, EPA reference method, high-volume total suspended particulate samplers (TSP samplers).

The 24-hour TWA monitoring data for both particulate matter and lead will be reviewed as it is returned by the laboratory. If action levels for either dust or lead are exceeded, the meteorological records and construction records for that day will be reviewed to determine the likely cause. Causes may be either meteorological (e.g., high winds, low humidity, etc.) or related to particular construction activities (e.g., use of certain haul routes, dozing material down steep slopes, etc.). Also, the historic wind direction data will help pinpoint the source or activities that may have impacted the samplers.

Once likely causes are identified, response actions can be developed for use when similar conditions occur. Response actions may include work practice changes (e.g., avoiding certain activities or work areas on windy days) or engineering controls (e.g., additional watering on high speed haul roads).

Visual monitoring of dust will occur on a real-time basis, with the goal of avoiding excessive visual dust leaving the site. Historically, the application of water on haul roads and adjustments to work practices is all that has been necessary to minimize visual dust leaving the site. However, because of the proximity of the site to residential and commercial buildings, additional dust suppression activities or best management practices (BMP) may need to be utilized. In the event the need for additional dust suppression activities arises, an evaluation of those activities will be made at that time.

The proposed monitoring system does not provide real-time analytical data. However, the historical monitoring records for the Big River Mine Tailings Site, the Bonne Terre Mine Tailings Site, the Rivermines Mine Tailings Site, and the Leadwood Mine Tailings Site indicate that the NAAQS for particulate matter were rarely exceeded as a result of onsite intrusive activities. These records also indicate that the NAAQS for lead has not been exceeded as a result of onsite intrusive activities. Therefore, use of the air monitoring stations to provide data for comparison to the action levels is reasonable.

5.0 Meteorological Monitoring

Meteorological monitoring will be completed as part of the air monitoring program. The meteorological station that will be utilized is the station located at the Big River Mine Tailings Site office building. This location, which is about 3.1 miles from the site, already has a meteorological station in place as part of the air monitoring programs for the Rivermines Mine Tailings Site, the Leadwood Mine Tailings Site and the National Mine Tailings Site. This station has been gathering

data on wind speed and direction, temperature, pressure, and precipitation since 1995. This station will be located near monitoring Station #2 described in more detail in Section 6.0, which includes the primary PM_{10} and TSP samplers, as well as the collocated Quality Assurance (QA) PM_{10} and TSP samplers.

5.1 Monitoring Methods and Equipment

The meteorological monitoring station will be a fixed, 10-meter meteorological tower. This tower will be appropriate to support the wind speed and direction sensors, as well as any other sensors as needed.

5.2 Station Siting Criteria

The tower was located so that airflow is not affected by nearby obstacles such as fences, brush, trees, and buildings. This was accomplished by locating the tower so that it either extends above any nearby obstacles or is located at a distance that is a minimum of two and one half times the height of the portion of an obstacle that protrudes above the tower away from the obstacle. In addition, the temperature sensor is installed in a location that is not in direct sunlight.

5.3 Monitoring Frequency

Monitoring will be performed on a continuous basis. Hourly readings of each parameter will be generated and stored in the data logger or hard copy printed. At least weekly, the stored data will be downloaded to a personal computer (PC) for management and reporting.

5.4 Quality Assurance/Quality Control (QA/QC) Requirements

Sensors will meet the sensitivity and accuracy requirements established for EPA/Prevention of Significant Deterioration (PSD) quality devices. Calibration procedures will carefully follow the requirements of the manufacturer and EPA/PSD procedures. All calibrations will be completely documented.

6.0 Monitoring and Sampling Station Siting Criteria

This monitoring plan utilizes two existing monitoring locations. Station #1, one of the stations already in operation, is located to the northwest of the Site at the City of Park Hills water treatment plant. Station #2, which is also currently in operation, consists of a TSP and PM_{10} sampler along with a set of collocated QC samplers. These samplers are located to the northwest of the Site at the

Big River Mine Tailings Site office building. The third existing monitoring location is located near the Off Road Vehicle (ORV) Riding Area within St. Joseph State Park and is operated by the Missouri Department of Natural Resources (MDNR). This plan does not address this monitor.

A fourth monitoring location was selected just north of St. Joseph State Park near Highway 32. The selected sampling locations are positioned beyond the Site boundaries (with the exception of the MDNR site), roughly on the north, northwest, and south of the Site. A map showing the sampling locations and UTM coordinates can be found in Appendix C of the *Air Monitoring Quality Assurance Project Plan.* Photographs of the four cardinal directions from each sampling location are located in Appendix D of the *Air Monitoring Quality Assurance Project Plan.*

Each air monitoring station will consist of one PM_{10} sampler and one TSP sampler except for Station #2, which will have two TSP samplers and two PM_{10} samplers. The second set of samplers at this location will be collocated samplers used to demonstrate QA precision.

Each high-volume sampler will be mounted on a two to four-foot high platform and securely anchored to the ground. This will place the inlet of the samplers well above the minimum required height of two meters above the ground surface.

Each platform will be provided with a semi-permanent power supply. When electrical service installation is delayed, portable electrical generators will be used in the interim. If seasonal meteorological factors, work process, or emission data reveal a need to move a sampling station, the station will be relocated within limited parameters.

7.0 Ambient Air Monitoring

Air monitoring will be performed beyond the Site boundaries in accordance with the EPA run schedule during intrusive operations. These fugitive emissions will be sampled for particulate matter (PM_{10} samplers), and lead (TSP samplers).

7.1 PM_{10} Sampling

A. Equipment

Particulate matter smaller than 10 microns will be measured using PM_{10} high-volume reference method samplers with volumetric flow controllers. Sample collection will be automatically initiated and terminated using a 7-day, 24-hour timer. An elapsed time indicator will be used to verify the

actual sampling duration. Sampler calibration and operation will conform with USEPA procedures (40 CFR Part 50).

B. Limits of Detection (LOD)

PM_{10} sampling will have a LOD of approximately 5.0 $\mu g/m^3$ and will be dependent on the sample volume and the selected laboratory analytical balance capabilities.

C. Sampling Frequency

In addition to the visual monitoring, PM_{10} samples will be collected once every 6 days for a duration of 24 hours. The schedule for sample collection will follow the EPA 6-day monitoring schedule for TSP and PM_{10} samplers. The 2013 EPA monitoring schedule is included as Appendix E. Updated monitoring schedules will be provided once issued by EPA.

Air monitoring activities will be continued until all of the soil/rock cover materials have been placed. Upon completion of these activities, air monitoring activities at the site may be halted with EPA approval.

D. Procedures

The sampling and analysis procedures outlined in 40 CFR Part 50, Appendix J will be followed. For each air sampling event, the following data processing procedures will be completed:

1. The quartz filter will be installed and the filter cover card will be filled in with pertinent information by the designated field personnel. When the sample is collected, it will be put in the filter cover and inserted into an envelope.

2. The sample will be processed and shipped to the offsite analytical laboratory designated by the EPA designated project coordinator or his/her designee.

3. Upon receipt of analytical data, which includes chain-of-custody documentation, the laboratory data will be reduced and a report prepared that lists the concentrations of PM_{10}.

4. The daily airborne PM_{10} air monitoring report will be evaluated by the EPA designated project coordinator to determine if action levels were exceeded.

5. If action levels were exceeded, the EPA designated project coordinator will develop response actions to reduce emissions.

6. Proposed response actions will be documented by the EPA designated project coordinator.

E. Laboratory QA/QC

QA/QC for the PM_{10} samples will follow the procedures required by the appropriate method (USEPA procedures 40 CFR Part 50). These procedures will include the use of blank samples. Equipment calibration and flow checks will also follow the requirements of the method.

7.2 TSP Airborne Lead Sampling

A. Method and Analysis

Ambient air will be sampled in accordance with 40 CFR Part 50, Appendix B, and the filter media will be analyzed in accordance with 40 CFR Part 50, Appendix G to determine airborne lead concentrations. TSP fractions will be collected using high-volume TSP samplers with volumetric flow controllers. Sample collection will be automatically initiated and terminated using a 7-day, 24-hour timer. An elapsed time indicator will be used to verify the actual sampling duration.

B. Frequency

TSP samples will be collected once every 6 days for a duration of 24 hours. The schedule for sample collection will follow the EPA 6-day monitoring schedule for TSP and PM_{10} samplers. The 2013 EPA monitoring schedule is included as Appendix E. Updated monitoring schedules will be provided once issued by EPA.

Air monitoring activities will be continued until all of the soil/rock cover materials have been placed. Upon completion of these activities, air monitoring activities at the site may be halted with EPA approval.

C. Procedures

The sampling and analysis procedures outlined in 40 CFR Part 50, Appendices B and G will be followed. For each air monitoring event, the following data processing procedures will be completed:

1. The glass fiber filter will be installed and the filter cover card will be filled in with pertinent information by the designated field personnel. When the sample is collected, it will be put in the filter cover and inserted into an envelope.

2. The sample will be processed and shipped to the offsite analytical laboratory designated by the EPA designated project coordinator or his/her designee.

3. Upon receipt of analytical data, which includes chain-of-custody documentation, the laboratory data will be reduced, and a report prepared that lists the concentrations of lead.

4. The daily airborne lead air monitoring report will be evaluated by the EPA designated project coordinator to determine if action levels were exceeded.

5. If action levels were exceeded, the EPA designated project coordinator will develop response actions to reduce emissions.

6. Proposed response actions will be documented by the EPA designated project coordinator.

D. QA/QC Using Collocated PM_{10} and TSP Samplers

The collocated QA sampling site will be established at Station #2 where a duplicate PM_{10} and TSP sampler will be installed. The primary and duplicate lead samplers will be separated by at least two meters, but not more than four meters.

The QA/QC procedures outlined in 40 CFR Part 50, Appendices B and G will be followed. QA samples will be collected from both samplers once every 6 days for a duration of 24 hours. The schedule for sample collection will follow the EPA 6-day monitoring schedule for TSP and PM_{10} samplers. The 2012 EPA monitoring schedule is included as Appendix E. Updated monitoring schedules will be provided once issued by EPA.

8.0 Air Sampling Logs and Reports

Each day any air sampling or monitoring occurs, an entry will be made into the onsite logbook documenting the activities. Any activities relating to filter changes, dust suppression, QA/QC, or unusual conditions will also be documented. Monthly air monitoring reports will be delivered by the contracting laboratory to the EPA designated project coordinator. Together, these documents will serve as the record for the air monitoring and sampling activities conducted during the remedial action.

Appendix A

Air Monitoring Station Site Selection
Federal Mine Tailings Site
Park Hills, Missouri

1.0 Introduction

The overall objective of the air monitoring effort for the Federal Mine Tailings Site (Site) is to monitor air quality to determine if airborne contaminants near the site boundaries exceed action level concentrations during removal actions. These values will be documented and reported to the client.

The site will utilize two existing monitoring locations, which are run by The Doe Run Company and one monitor location run by Missouri Department of Natural Resources (MDNR). The existing monitoring sites include one location with both total suspended particulates (TSP) and PM_{10} quality assurance (QA) monitors.

Rick Campbell and Ty Morris of Barr Engineering visited the site on April 26 for the purpose of establishing another monitoring site location for the project. The entire area was surveyed and a location was chosen. The site will be equipped with both fine particulates (PM_{10}) and TSP monitors. The TSP filters will all be analyzed for lead.

2.0 Methodology

The guidelines that were used in making the selections are as follows:

1. All of the stations will be located around the Site beyond the boundaries of the Site. Three stations from the National Mine Tailings Site will be utilized for this site. Station #1 is an existing station located northwest of the Site at the City of Park Hills water treatment plant. Station #2 is an existing station located northwest of the Site at the Big River Mine Tailings Site office building. Station #2 will also be the location of the collocated QA monitors, as well as the meteorological tower. The State of Missouri operates Station #3, which is located to the south of the Site near the Off Road Vehicle (ORV) Riding Area within St. Joseph State Park. Station #3 is mentioned here, but is not covered by this plan. All data from Station #3 will be supplied by the State of Missouri. Station #4 is a new station located north of the Site on Highway 32 near the old mill.

2. The four monitoring stations will reflect the impact on the majority of the populated area. The monitoring sites represent wind directions that would have the greatest impact on populated areas around the site.

3. All of the Doe Run operated sites will measure both PM_{10} and lead.

4. Care was taken to ensure that upwind and downwind measurements would be taken across the monitors whichever direction the wind was blowing.

3.0 Description of Selected Locations (See Appendix C and Appendix D)

Station #1 (Water Plant) – This location is northwest of the site at the City of Park Hills water treatment plant. The predominant winds blow from the southwest during the summer and from the northwest during the winter, so this will be an upwind station during the summer. This station is part of the air monitoring network for the Rivermines Mine Tailings Site and has been in operation since 2005. The station is located within a fenced area so security is not a problem. The station consists of one PM_{10} sampler and one TSP sampler. Both samplers will follow the EPA 6-day monitoring schedule for TSP and PM_{10} samplers. It should be noted that this station is located between the Federal Mine Tailings Site where off-road vehicles are allowed to ride on unvegetated tailings and the Rivermines Mine Tailings Site where a local asphalt company removes chat from the remaining pile for use in their asphalt plant. Therefore, this station will be useful in determining background levels in the area.

Station #2 (BRMT Office) – This location is northwest of the Site at the Big River Mine Tailings Site (BRMT) office building. This station was part of the BRMT Site air monitoring network and is part of the air monitoring network for the Rivermines Mine Tailings Site and the Leadwood Mine Tailings Site. This station has been in operation since 1995. The predominant winds blow from the southwest during the summer and from the northwest during the winter, so this will be an upwind station during the winter. The station consists of one PM_{10} sampler and one TSP sampler, as well as one collocated PM_{10} sampler and one collocated TSP sampler for QA purposes. Both primary samplers and the QA samplers will follow the EPA 6-day monitoring schedule for TSP and PM_{10} samplers.

In addition to the monitors, the meteorological station is also located at Station #2. This station collects data for wind speed and direction, temperature, barometric pressure and precipitation.

Station #4 (Hwy 32) – This location is on Highway 32 just north of the Federal Mine Tailings Site, near the old mill. The predominant winds blow from the southwest during the summer and from the northwest during the winter, so this will be a downwind station during the summer. The station is located within a fenced area so security is not a problem. The station consists of one PM_{10} sampler and one TSP sampler. Both samplers will follow the EPA 6-day monitoring schedule for TSP and PM_{10} samplers.

4.0 Field Sheets

The trip field sheets are attached in Appendix B. EPA siting criteria are listed on the sheets.

Appendix B

Field Data Sheets

AIR MONITORING SITE EVALUATION REPORT
Shell Engineering & Associates, Inc.
Particulate Form

POLLUTANT(s): PM_{10} and Lead **DATE:** 14-MAR-07

INSPECTOR: Phil Bruner, Joe Grosvenor **SITE NO.** Station #1 (Water Plant)

Air Sampler (s) : One (1) High Volume TSP Particulate Sampler – Volumetric Flow Controlled
One (1) EPA Reference Method High Volume PM_{10} Sampler – Volumetric Flow Controlled

SCALE (Micro, Middle, Urban) - MICRO

ITEM	EPA RECOMMENDS* PARAMETERS	ACTUAL SITING
Placement of sampler above ground level	2-7 meters.	*Acceptable*
Separation from walls, etc.	At least 2 meters from walls, etc.	*None present at this location*
Minimum distance from obstacles	Allowable horizontal distance = Twice the difference of the height of the obstacle minus the height of the sampler.	*None present between source and sampler*
Furnace flues	None should be nearby.	*None*
Tree clearance	Minimum distance of 10 meters between the sampler and drip-line of trees.	*Acceptable*
Distance from road	2-10 meters from roadway.	*Greater than 2 meters from dead-end gravel driveway*
Vegetation	Should have vegetative ground cover throughout the year.	*Partial ground cover*
Air Flow - North	Unrestricted - 3 of 4 directions	*Unrestricted in all directions*
Air Flow - East	Unrestricted - 3 of 4 directions	
Air Flow - South	Unrestricted - 3 of 4 directions	
Air Flow - West	Unrestricted - 3 of 4 directions	

*** According to 40 CFR Part 53, Appendix E, 2006**

AIR MONITORING SITE EVALUATION REPORT
Shell Engineering & Associates, Inc.
Particulate Form

POLLUTANT(s): PM_{10}, LEAD **DATE:** 14-MAR-07

INSPECTOR: Phil Bruner, Joe Grosvenor **SITE NO.** Station #2 (BRMT office)

Air Sampler (s) : Two (2) High Volume TSP Particulate Sampler – Volumetric Flow Controlled
Two (2) EPA Reference Method High Volume PM_{10} Sampler – Volumetric Flow Controlled

SCALE (Micro, Middle, Urban) - MICRO

ITEM	EPA RECOMMENDS* PARAMETERS	ACTUAL SITING
Placement of sampler above ground level	2-7 meters.	*Acceptable*
Separation from walls, etc.	At least 2 meters from walls, etc.	*None present at this location*
Minimum distance from obstacles	Allowable horizontal distance = Twice the difference of the height of the obstacle minus the height of the sampler.	*None present between source and sampler*
Furnace flues	None should be nearby.	*None*
Tree clearance	Minimum distance of 10 meters between the sampler and drip-line of trees	*Acceptable*
Distance from road	2-10 meters from roadway.	*Acceptable*
Vegetation	Should have vegetative ground cover throughout the year.	*Graveled parking area*
Air Flow - North	Unrestricted - 3 of 4 directions	*Unrestricted in all directions*
Air Flow - East	Unrestricted - 3 of 4 directions	
Air Flow - South	Unrestricted - 3 of 4 directions	
Air Flow - West	Unrestricted - 3 of 4 directions	

*** According to 40 CFR Part 53, Appendix E, 2006**

AIR MONITORING SITE EVALUATION REPORT
Barr Engineering Company
Particulate and Lead

POLLUTANT(s): PM_{10}, LEAD **DATE:** April 26, 2012

INSPECTOR: Rick Campbell and Ty Morris **SITE NO.** Station #4 (Hwy 32)

Air Sampler (s) : One (1) High Volume TSP Particulate Sampler – Volumetric Flow Controlled
One (1) EPA Reference Method High Volume PM_{10} Sampler – Volumetric Flow Controlled

SCALE (Micro, Middle, Urban) - MICRO

ITEM	EPA RECOMMENDS* PARAMETERS	ACTUAL SITING
Placement of sampler above ground level	2-7 meters.	*Acceptable*
Separation from walls, etc.	At least 2 meters from walls, etc.	*None present at this location*
Minimum distance from obstacles	Allowable horizontal distance = Twice the difference of the height of the obstacle minus the height of the sampler.	*None present between source and sampler*
Furnace flues	None should be nearby.	*None*
Tree clearance	Minimum distance of 10 meters between the sampler and drip-line of trees.	*Acceptable*
Distance from road	2-10 meters from roadway.	*Acceptable*
Vegetation	Should have vegetative ground cover throughout the year.	*Graveled parking area*
Air Flow - North		*Unrestricted in all directions*
Air Flow - East	Unrestricted - 3 of 4 directions	
Air Flow - South	Unrestricted - 3 of 4 directions	
Air Flow - West	Unrestricted - 3 of 4 directions	

*** According to 40 CFR Part 53, Appendix E, 2006**

Appendix C

Map of Site Locations with UTM Coordinates
Federal Mine Tailings Site
Park Hills, Missouri


Big River #2, N37 52.370 w90 32.360
Desloge
Flat River
Park Hills
Rivermines
Water Plant #1, N37 50.475 w90 31.589
Federal #4, N37 50.492 W90 30.386
Leadington
Elvins
St. Joe #3, N37 48.838 W90 30.437

Appendix D

Photographs of Site Locations
Federal Mine Tailings Site
Park Hills, Missouri

Station #1 (Water Plant) – Located near the City of Park Hills water treatment facility.

Photographs taken from proposed site location.

Facing North

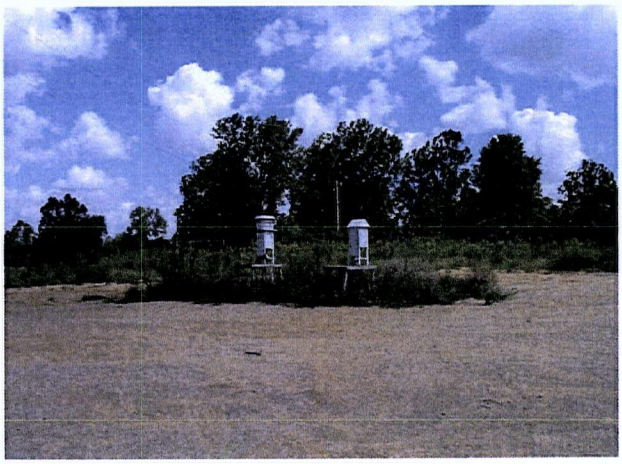
Facing East

Facing South

Facing West

Station #2 (BRMT Office) – Located near the Big River Mine Tailings Site office building.

Photographs taken from proposed site location.



Facing North

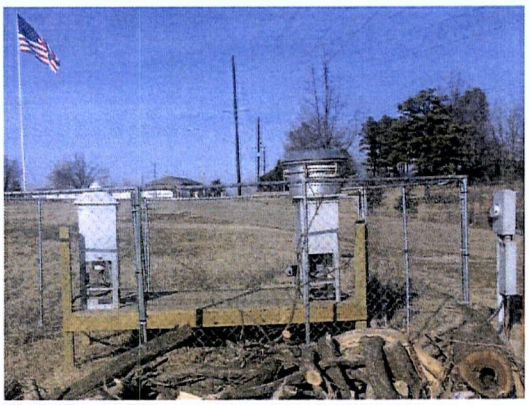
Facing East

Facing South

Facing West

Station #4 (Hwy 32) – Located off Highway 32 just north of the site, near the old mill.

Photographs taken from proposed site location.



Facing North

Facing East

Facing South

Facing West

Appendix E

EPA 2013 Monitoring Schedule

2013 Monitoring Schedule

3-day & 6-day Monitoring Schedule for TSP, Pb, PM-10, PM-2.5, and VOC. 12-day Monitoring Schedule for PM-2.5 Collocation.